Wisconsin
Department of Commerce

Approval # 20000016

Environmental & Regulatory Services Division
Bureau of Storage Tank Regulation
201 West Washington Avenue
P.O. Box 7837
Madison, WI 53707-7837

Wisconsin COMM 10 Material Approval

Equipment: EZY 3 Locator Plus Nonvolumetric Tank Tightness Test

Manufacturer: Estabrook's Inc.
1505 Woodside Ave.
Essexville, MI 48732

Expiration of Approval: December 31, 2006

SCOPE OF EVALUATION

The EZY 3 Locator Plus Nonvolumetric Tank Tightness Test, manufactured by Estabrook's Inc., has been evaluated in accordance with **s. Comm 10.61(3)** of the current edition of the Wisconsin Administrative Flammable and Combustible Liquids Code.

This evaluation summary is condensed to provide the specific installation, application and operation parameters necessary to maintain the subject systems in compliance with the Wisconsin Administrative Code – Comm 10.

DESCRIPTION AND USE

The EZY 3 Locator Plus Nonvolumetric Tank Tightness Test is a non-volumetric test method, and is not affected by temperature changes, tank dimensional changes, end deflection, or trapped vapor pockets.

The EZY 3 Locator Plus test method uses a microphone placed in the ullage of the underground tank. Acoustic signals produced by leaks into the ullage or by bubbles produced

by leaks below the product level, are detected by the microphone. These signals are then recorded, and analyzed further by a trained operator.

The test begins by placing the sealed microphone assembly into the ullage of the tank, and then recording a baseline signal at atmospheric pressure. The baseline signal recording consists of the background acoustical noise present from the tanks surroundings. Since air will not leak into the tank under atmospheric conditions, this signal will not include any leak. After the background signal is recorded, the tank pressure is reduced through the use of a vacuum pump by approximately 1.0 psid, and the acoustic signal of the tank again recorded. Under these conditions, if a leak is present the difference in the acoustic signal will be detected by the operator.

Tank products that can be tested using this method include diesel, gasoline, aviation fuel, #4 & #6 fuel oil, solvents, waste oil; virtually any liquid.

TESTS AND RESULTS

The performance of the EZY 3 Locator Plus test as a annual tank tightness testing method was verified by Ken Wilcox Associates in accordance with the EPA Protocol for nonvolumetric tank tightness testing systems. The EZY 3 Locator Plus system was found to detect a leak of 0.1 gph with 100 percent probability of detection and 1.6 percent probability of false alarm. The calculated confidence interval was within established parameters; this illustrates that the data set was large enough to provide a realistic assessment of the expected detection and false alarm capabilities.

LIMITATIONS / CONDITIONS OF APPROVAL

- **Prior to beginning any testing, groundwater level must be determined by measurement through the use of an observation well or soil probe in the tank excavation backfill.**

  - If the groundwater level is below the tank bottom, then the Estabrook EZY 3 Locator Plus method can be used alone.

  - If the groundwater level is above the tank bottom, then a water conductivity sensor must be used in conjunction with the Estabrook EZY 3 Locator Plus method. The Estabrook EZY 3 Locator Plus method will detect leaks in the ullage and product space above the groundwater level; but not in the portion of the product space below the groundwater level. Water conductivity testing must also be performed.

When Groundwater Level in Tank Excavation Backfill is Below Bottom of Tank:

- The EZY 3 Locator Plus test is approved for use as a method of annual tank tightness testing specified in **s. Comm 10.61 (3)**.

- Critical performance parameters for the EZY 3 Locator Plus Method:

Parameter	Value
Tank size for a single tank or Each tank in a manifolded system [1]	Up to 30,000 gallons
Average waiting time after filling tank	No waiting time required
Average Data Collection Time per Test	2 minutes after vacuum achieved
Minimum Test Pressure Differential [2]	0.5 psi

1: As long as each manifolded tank contains a microphone, water sensor, and pressure monitoring gauge.
2: The test pressure in psig (vacuum) is equal to the hydrostatic pressure of the product in the tank, plus the required minimum test pressure differential (0.5 psi), minus the hydrostatic pressure from the groundwater and pressure from the backfill on the tank.

Size of Tank	Acceptable Product Levels	Type of leak that may be tested for
50 to 12,000 gallons	Empty to 99%. Ullage volume must not be less than 50 gallons [3]	Product and Ullage leaks
12,000 to 30,000 gallons	Ullage volume must not exceed 12,000 gallons or be less than 50 gallons [3]	Ullage leaks
50 to 30,000 gallons	Empty to 99%.	Product leaks

3: Minimum ullage size is the greater of either 50 gallons or 1% of the total tank volume.

- All operators of the Estabrook EZY 3 Locator Plus method must pass certification testing, and be re-certified every two years to maintain their license.

- Testing must be conducted under reasonably quiet conditions. Heavy traffic, nearby trains, industrial centers, or construction activities could produce sound levels that could compromise the test. Testing periods should be selected in order to minimize these effects.

When Groundwater Level in Tank Excavation Backfill is Above Bottom of Tank:

- When testing for ullage and product leaks above the groundwater level, the EZY 3 Locator Plus test is approved for use as a method of annual tank tightness testing specified in **s. Comm 10.61 (3)**. **The Limitations/Conditions of Approval as stated above still apply.** However, in testing for product leaks below the groundwater level, water conductivity testing must also be performed.

- Critical performance parameters for the water conductivity test method:

Parameter	Value
Minimum Detectable Water Level [1]	0.014 in.
Minimal Detectable Change in Water Level	0.0095 in.
Minimum Data Collection Time per Test [2]	Varies based on tank size and configuration

1: Minimum water level in tank must be adjusted to at least 0.014 in. before calibrating sensor and starting test.
2: In order to calculate the minimum data collection time, assume 0.10 gph leak, and calculate time required to detect the minimal detectable change in water level (0.0095 in.) based on tank size/configuration.

This approval will be valid through December 31, 2006, unless manufacturing modifications are made to the product or a re-examination is deemed necessary by the department. The Wisconsin Material Approval Number must be provided when plans that include this product are submitted for review.

DISCLAIMER

The Department is in no way endorsing or advertising this product. This approval addresses only the specified applications for the product and does not waive any code requirement unless specified in this document.

Reviewed by: _____
Greg Bareta, P.E.
Engineering Consultant
Bureau of Storage Tank Regulation

Approved by: _____ Date: _____